Reviewer's report

Title: Lifestyle risk factors and residual life expectancy at age 40: a German cohort study

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Reviewer: Evelyn Wong

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This article on the effect of lifestyle risk factors on residual life expectancy (RLE) over the age of 40 is important at this time of increasing prevalence of ‘unhealthy’ lifestyle behaviours in an ageing population. The authors identified smoking, low body weight, obesity, high alcohol consumption and high red meat/highly processed food as significant risk factors of reduced life expectancy with smoking as the strongest risk factor. There are however some areas which can be improved prior to publication.

Major Compulsory Revisions

1) With regards to low body weight being associated with reduced RLE, it would be worthwhile to explore further with some sensitivity analyses:
   a. If low body weight was defined as BMI<18.5kg/m2
   b. Is it possible that the low body weight group was dominated by heavy smokers and therefore a reduced RLE was observed? Did the authors analyse the effect of body weight on RLE in never smokers only?
   c. If participants who died within 1-3 years of baseline were excluded. There may have been weight loss due to undiagnosed disease such as cancer and by re-analysing with this exclusion, the possibility of reverse causation can be somewhat accounted for.

2) In the multivariate models, the authors adjusted for education as a confounder. What was the hazards ratio and 95% CI for all cause mortality? Was it statistically significant? If it was, what would the effect be of calculating RLE for all risk factors combined with fixed education at ‘secondary/professional’? Are some risk factors such as cigarette smoking higher in lower socio-economic position (in this study measured by education) and lower education/socio-economic groups have lower RLEs? If so, how much of the lowered RLE for each risk factor is driven by lower socio-economic position?

Minor Essential Revisions

1) Last paragraph of ‘Results’ – spelling ‘covariantes’ – change to covariates
2) Paragraph 8 in ‘Discussion’ discussing the effect of food groups, change the word ‘confirms’ to ‘confirmed’ in the sentence, “Low fruit/vegetable consumption has also been associated with increased mortality rate in a study based on the entire EPIC cohort [31], but we only confirms this finding among men by showing
a loss of RLE by 1.3 (95% CI: 0.4, 2.1) years associated with the low consumption.”

Discretionary Revisions
1) In the abstract, under ‘Results’, perhaps the word ‘ignorable’ could be replaced with ‘negligible’.
2) It may be worthwhile classifying physical activity by WHO recommendations (Adults aged 18–64 should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity. Ref: http://www.who.int/dietphysicalactivity/factsheet_adults/en/index.html)

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.